Growing WILD

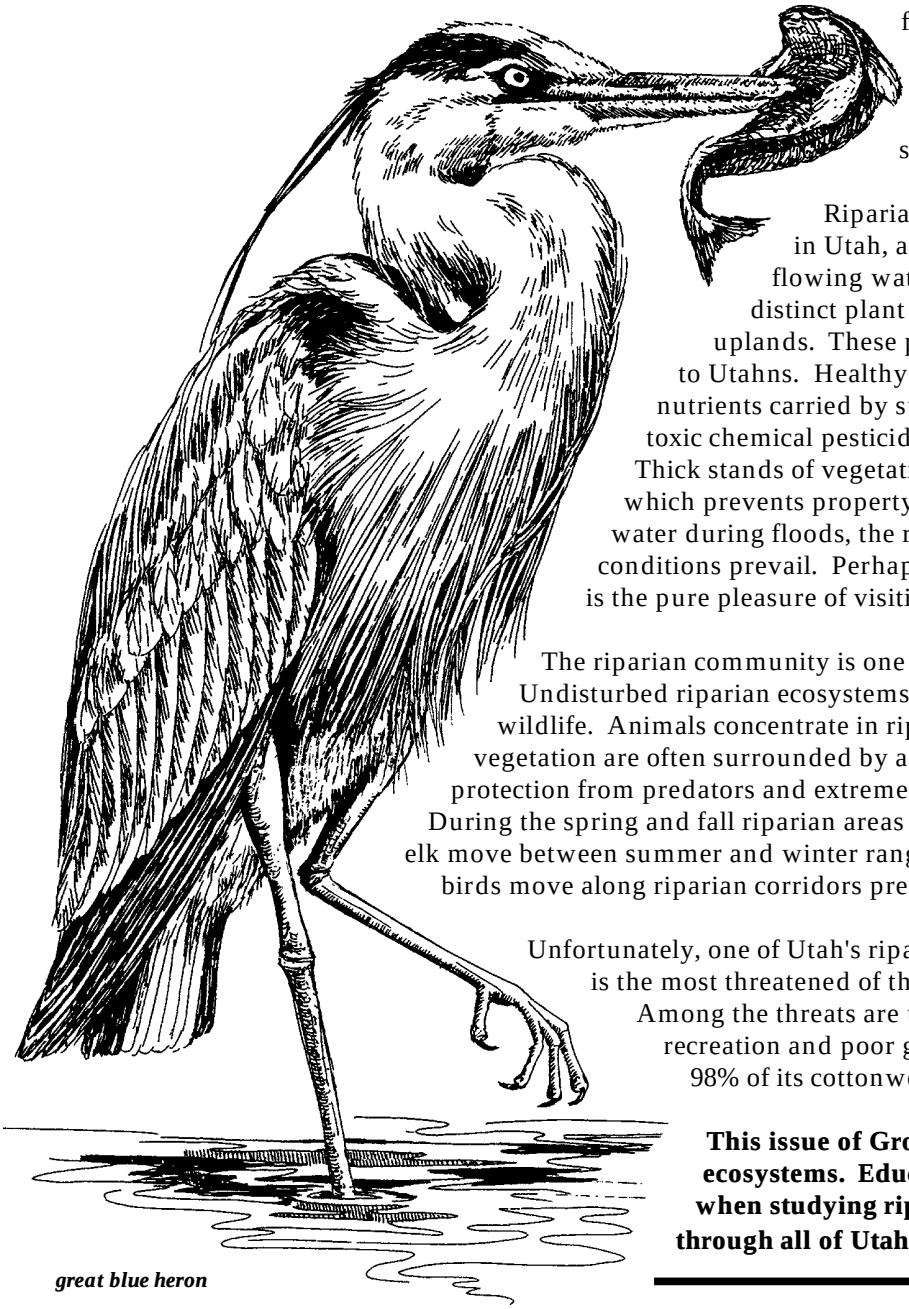
Utah's Project WILD Newsletter

Fall 1996

The Riparian Zone...

A Thin Green Line

From lush mountain stream banks to redrock river valleys, riparian zones spread across Utah like thin green veins. Within these veins runs the water that all life needs. But riparian areas are not just conduits. They are more - much more. Tall cottonwood castles provide perches and protection as they tower over thick stands of willow, alder and water birch. This understory of shrubs, in turn stands over an amazing diversity of sedges, grasses, forbs and other plants. Great "hatches" of insects thrive on the abundant plant life. During the warmer months, a world of wildlife: nighthawks, swallows, swifts, bats, frogs and salamanders feed within the thin green line.



great blue heron

Riparian ecosystems, which are found at all elevations in Utah, are generally defined as those areas adjacent to flowing waterways and standing waterbodies, having distinct plant communities different than that of nearby uplands. These plant communities provide remarkable benefits to Utahns. Healthy riparian plant communities trap sediments and nutrients carried by surface runoff and "tie up" pollutants including toxic chemical pesticides, thereby keeping our water supply clean. Thick stands of vegetation hold stream banks in place during flooding, which prevents property damage and loss. In addition, by absorbing water during floods, the riparian zone slowly releases water when drier conditions prevail. Perhaps, the most important benefit gained by people is the pure pleasure of visiting these verdant oases.

The riparian community is one of Utah's most productive and diverse. Undisturbed riparian ecosystems provide abundant food, water and shelter for wildlife. Animals concentrate in riparian areas because open water and lush vegetation are often surrounded by a much harsher, drier environment. Wildlife seek protection from predators and extreme summer heat in riparian vegetation as well. During the spring and fall riparian areas serve as migration corridors where animals like elk move between summer and winter ranges. At the same time, Neotropical migratory birds move along riparian corridors preying upon the swarms of insects found there.

Unfortunately, one of Utah's riparian ecosystems, the cottonwood / willow forest, is the most threatened of the 106 forest types found in North America. Among the threats are urban development, invasion of exotic species, recreation and poor grazing management. California has already lost 98% of its cottonwood / willow forests.

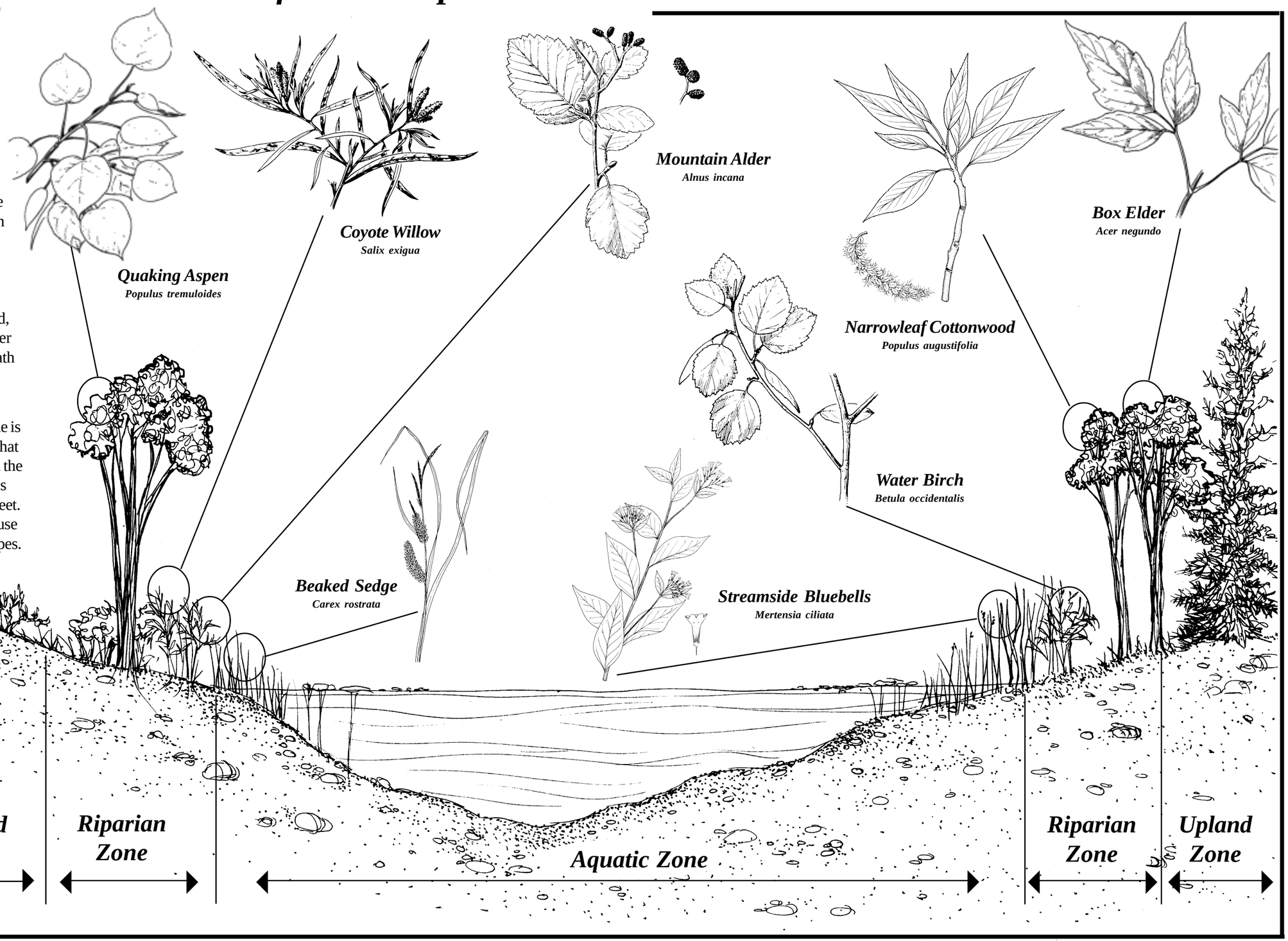
This issue of Growing WILD explores Utah's riparian ecosystems. Educators might want to use a thematic approach when studying riparian zones because these thin green lines run through all of Utah and all of us.

Common Plants of Utah's Riparian Zone

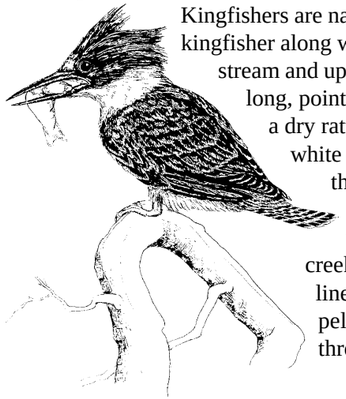
Riparian vegetation grows adjacent to places where water flows (rivers and streams) or water stands (ponds, lakes and reservoirs). This means riparian areas can be found almost anywhere in Utah where there is a year-round source of water. Riparian areas can be recognized by plants that grow there. The scene at the right is a general representation of a Utah riparian area. Shown are some of the more common riparian plants. All of these plants would not necessarily be found together in all riparian areas. Look for cottonwood, aspen or box elder trees standing over willow, birch or alder bushes. Beneath the shrubs look for bluebells, sedges and grasses.

Viewed from above, the riparian zone is a narrow, dense band of vegetation that separates the drier upland zone from the aquatic zone. This separation creates edges where different ecosystems meet. Edges are important to wildlife because they provide a diversity of habitat types. As a result, more animals can exist in a small area.

Riparian areas also have several different vertical layers; tall cottonwood trees create a canopy over the thick willow-birch shrub level and beneath that are grasses, forbs and sedges. These distinct vertical layers further increase the diversity of habitat types, allowing for a greater diversity of wildlife.

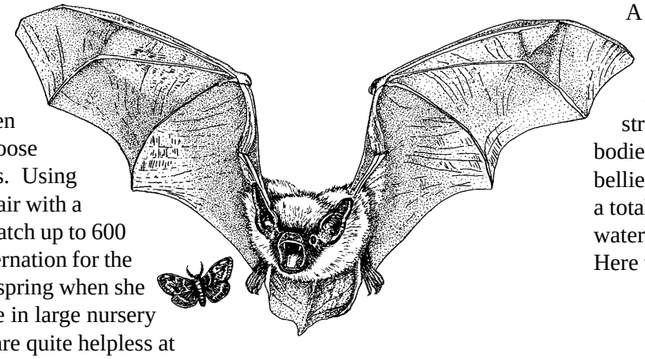


Belted Kingfisher (*Megaceryle alcyon*)



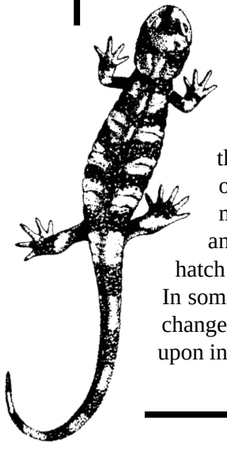
Kingfishers are named after Alcyone, who, according to Greek mythology, was transformed into a kingfisher along with her drowned husband. These piscivorous birds hover 20 to 40 feet above a stream and upon spotting a fish, dive head first into the water catching the small fish in their long, pointed bills. If you are near a stream and hear a raucous chattering call that resembles a dry rattle, you may be in a kingfisher's territory. Both sexes are slate-blue colored with white collars, have stout bodies with short legs, and tote a crown of ragged feathers on their heads. Females have rufous colored feathers on their breasts and sides. Solitary for most of the year, kingfishers form pairs for breeding. A nest is built at the end of a 3 to 7 feet long, 3 inch wide tunnel that the pair digs into the bank of a creek. They dig with their bills and push the dirt out with their feet. The nests are lined with undigestible fish bone and scale fragments that the parents regurgitate as pellets. After the young have fledged, the parents teach them how to feed by throwing dead fish into the water.

Little Brown Bat (*Myotis lucifugus*)



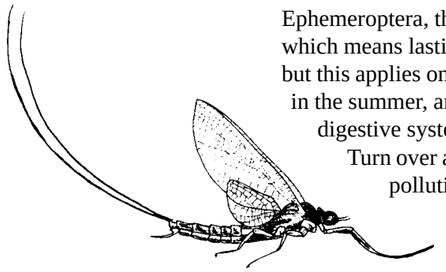
The little brown bat belongs to a group of bats called “mouse-eared” bats. About 2 inches long and weighing a mere 1/4 ounce, this small bat is the most common mouse-eared bat in Utah and North America. Little brown bats often inhabit riparian woodlands. During the day they roost in hollow trees, under loose bark or in rock crevices. They emerge at dusk to hunt for a variety of insects. Using echolocation, they find their prey, and then capture it by knocking it from the air with a wingtip and transferring it to their mouth. Amazingly, a little brown bat can catch up to 600 mosquitos in an hour! Little brown bats mate in the fall before going into hibernation for the winter. The egg in a female's body is not fertilized and doesn’t implant until spring when she emerges from the winter roost. About 2 months later, the females congregate in large nursery colonies to bear their young. One pup is usually born to each female. They are quite helpless at first, but develop rapidly, learning to fly within 3 weeks.

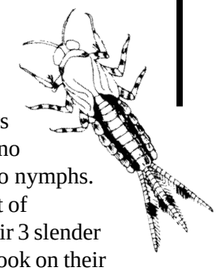
Tiger Salamander (*Ambystoma tigrinum Utahensis*)



The tiger salamander is Utah’s only salamander species, ranging across most of the state except in the Great Basin. Light yellowish spots or stripes on a dark olive to black background that resemble “tiger” markings give it its name. They have 5 toes on their hind feet, but only 4 toes in front. Being an amphibian, the tiger salamander needs moist environments near water to live and reproduce. In spring, eggs are attached to weeds and twigs in calm pools along rivers and streams. After about 5 to 10 weeks, the eggs hatch into fish-like larvae with gills. Usually the larvae metamorphose into breeding adults. In some colder streams the larval form (referred to by the Aztec name *axolotl*), does not change into an adult, but is still able to produce young. Active at night, tiger salamanders prey upon insects, earthworms and small invertebrates.

Mayflies (Order - Ephemeroptera)

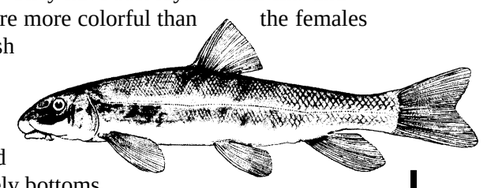




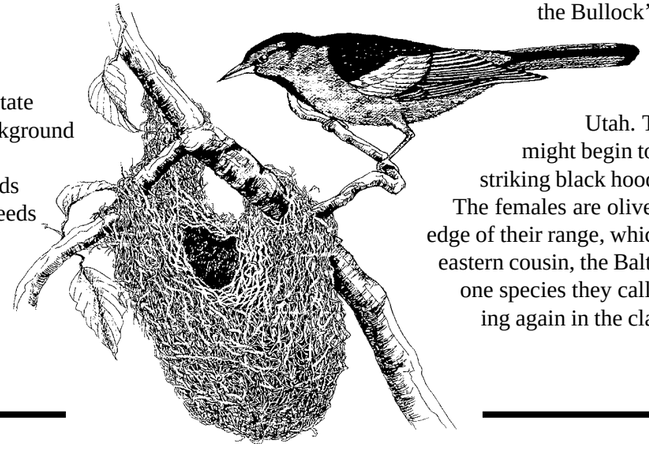
Ephemeroptera, the order name of mayflies is derived from the latin word “ephemerous” which means lasting only a day. Much has been written about the short lives of mayflies but this applies only to the adult stage. Delicate lacy-winged adults emerge in great numbers in the summer, and within hours mate, lay their eggs and die. They die because they have no digestive systems and are unable to feed. Eggs are laid in streams where they hatch into nymphs. Turn over a boulder in any clear, unpolluted stream (mayflies are especially intolerant of pollution), and you might find mayfly nymphs. Look closely and you will see their 3 slender tails, plate-like gills on the sides of their abdomens and claws with one hook on their legs. The nymphs feed on aquatic plants and organic detritus. As they grow, they shed their exoskeletons (molt) and go through stages called instars. After several months to a couple of years (depending on the species) the nymphs emerge from the stream. They molt again into a winged sub-adult form which, after 24 hours, molts a second time to become a true adult.

Mountain Sucker (*Pantosteus platyrhynchus*)

A native to the ancient Lake Bonneville drainage basin, this species of sucker is relatively common in Utah. Suckers are a type of fish closely related to minnows. They have soft rays in their fins and toothless jaws. Their teeth are in their throats. The males are more colorful than the females and during the breeding season, sport a deep orange to reddish stripe above a greenish-black stripe running the length of their bodies. Their upper body is a mossy mottled green and their bellies are whitish. They are smaller than most suckers, reaching a total length of 5 to 6 inches. Mountain suckers prefer clear, cold waters of creeks or small rivers, 1 to 3 feet deep with sandy, gravely bottoms. Here they scrape algae from rocks with specialized cartilaginous structures inside their mouths.



Bullock’s Oriole (*Iterus bullocki)*



If you have spent time among the cottonwoods and willows along a stream, you have probably seen nests of the Bullock’s oriole. These dangling, teardrop-shaped nests, woven from a variety of fibers such as flax, inner bark of trees and horse hair, are especially strong. Lined with plant down or wool, they cradle a clutch of 3 to 6 pale bluish-white eggs. In the summer, Bullock’s orioles are common in riparian areas throughout Utah. They migrate to Central America for the winter. As early as May however, you might begin to see these brilliantly colored songbirds returning to breed. The males have a striking black hood of feathers and a beautiful yellow-orange body with white- barred black wings. The females are olive-brown colored with a tinge of orange on the side of the head. On the eastern edge of their range, which falls at the edge of the Great Plains, the Bullock’s oriole hybridizes with its eastern cousin, the Baltimore oriole. This led scientists, in 1973, to lump the two species together into one species they called the Northern oriole. After further study, this decision was reversed, resulting again in the classification of two separate oriole species.

Riparian Thematic Unit…

Water Runs Through It

spotted sandpiper

Use Project WILD activities to create a riparian thematic unit. Offer students a unique and fun opportunity to engage in an interdisciplinary exploration which meets core curriculum requirements. Since riparian zones run through all ecosystems and much of humanity's history, many science and social studies core objectives can be taught. In addition, countless works of prose and poetry have riparian themes. And the natural movements and sounds associated with riparian areas are evocative and compelling. Most importantly, much of childhood's exploration takes place along the margins of creeks, ponds and lakes.

Below, Project WILD activities are listed according to grade level. Beside each activity is a brief description of the core curriculum objectives that the activity teaches. **Of course, a riparian thematic unit can be taught at any grade level, so if your grade level is not listed, call Project WILD for a copy of our suggestions.**

Grade 3

Aqua Words - written expression (Language Arts), exploring ecosystems (Science)
The Power of a Song - listening to music (Art), natural resource conservation (Social Studies)
Are You Me? - growth and development patterns (Healthy Lifestyles), investigating ecosystems (Science)
Marsh Munchers - food chains (Science), movements in nature (Dance, Drama)
Water We Eating? - ecosystem relationships (Science), use and supply of natural resources (Social Studies)
Water Plant Art - using a variety of media (Art), exploring ecosystems (Science)
Litter We Know - influences of people on ecosystems (Science), individual responsibilities (Social Science)
Deadly Skies - technology's effects on ecosystems (Science), problem-solving (Social Studies)
Water Canaries - ecosystem exploration (Science), measurement & data analysis (Math)
Something's Fishy Here! - natural resource issues, effects of technology (Science), modification of environments (Social Science)
Ethi-Thinking - issue investigation, taking action (Science), issue / problem resolution (Social Studies)

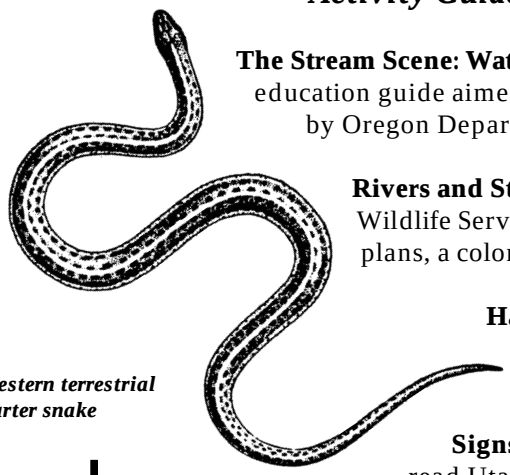
Grade 4

Water Wings - listening skills, written composition (Language Arts), water cycle (Science)
Blue Ribbon Niche - relate plants and animals to a biome (Science), drawing skills (Art), describe Utah physical features (Social Studies)
Who Fits Here ? - plant and animal adaptations (Science), research skills (Social Studies)
Bird Song Survey - collecting and interpreting data (Math), analyzing animal diversity (Science)
Fashion a Fish (or an aquatic insect) - adaptations, structure and function, (Science), drawing skills (Art)
Fishy Who's Who (or ID aquatic insects) - classification (Science), research and map skills (Social Studies)
Who Lives Here? - writing descriptions (Language Arts), research and discussion skills (Social Science), animal classification (Science)
Here Today Gone Tomorrow - extinction of animals (Science), interviewing (Social Studies)
To Dam or Not to Dam - story dramatizations (Drama), analysis and drawing conclusions (Social Studies)
Can Do! - problem-solving and action (Social Studies)

Riparian Rewards

Resources

Activity Guides and Books Available for Check-out



western terrestrial garter snake

The Stream Scene: Watersheds, Wildlife and People - A comprehensive activity-based aquatic education guide aimed at teaching students about watersheds and riparian areas. Produced by Oregon Department of Fish and Wildlife. Grades 5-12

Rivers and Streams Habitat Pac - An activity packet produced by the U.S. Fish and Wildlife Service focusing on the value of rivers and streams. Includes three lesson plans, a colorful poster and a fun educational game. Grades 4-7

Hands on Save Our Streams - An important manual for teachers doing stream-based action projects. Includes activities, action strategies and a national network of volunteer water monitors. Grades 4-12

Signs Along the River - A beautifully illustrated book which helps children read Utah's landscape .

Clean Water, Streams and Fish: A Holistic View of Watersheds - A supplementary, interdisciplinary curriculum that stresses understanding the relationship between people, wild salmon and watersheds of the Northwest. Elementary or Secondary

Request a Free Copy! Call Project WILD, (801) 538-4719.

Aquatic Insects Identification Key - An information packet on aquatic insects, with a key and diagrams to help identify aquatic insect larvae. Grades 5-12

Rivers At Risk - An activity-based study guide which addresses the recovery efforts and life histories of the four endangered fish of the Colorado River basin. Grades 5-12

Creek Chompers - An adaptation of the Aquatic Project WILD activity, *Marsh Munchers*, that features stream organisms.

Riparian Retreat Audio Cassette - Background sounds to accompany the Aquatic Project WILD guided imagery activity, *Riparian Retreat*.

Videos Available for Check-out

Rivers and Streams - An entertaining yet educational video about rivers and streams from *Bill Nye the Science Guy* series. 30 min. Grades 4-7

Threads of Life - An excellent overview of the value of riparian areas to wildlife and people and the impacts of human-related changes. Although filmed in Arizona, this video applies well to riparian areas in Utah. 15 min. Grades 4-12

Riparian Internet Sites

American Rivers - Dedicated to protecting and restoring American Rivers. http://www.igc.apc.org/amrivers/

Aquatic Conservation Network - Dedicated to conservation of aquatic life with a focus on freshwater fishes. http://www.achilles.net/holiday/acn/acnhome.html

Global Rivers Environmental Education Network (GREEN) - Interdisciplinary action-oriented watershed education program. http://www.igc.apc.org/green/green.html

Environmental Protection Agency's Kid's Water Page - Water education activities for kids. http://www.epa.gov/ow/ogwd/kids/

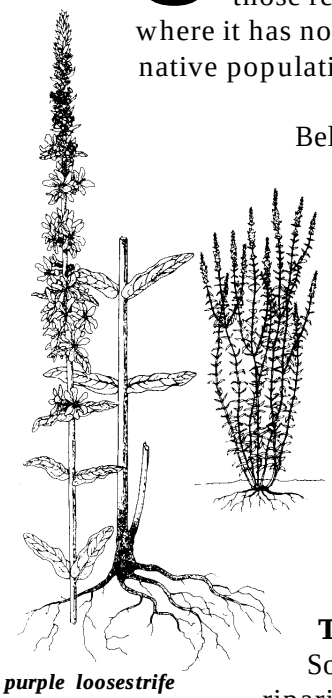
Give Water a Hand - Join young people learning about water in their communities and how to make a difference! http://www.uwex.edu/erc/

Issue Investigation

Invasion of the Habitat Snatchers!

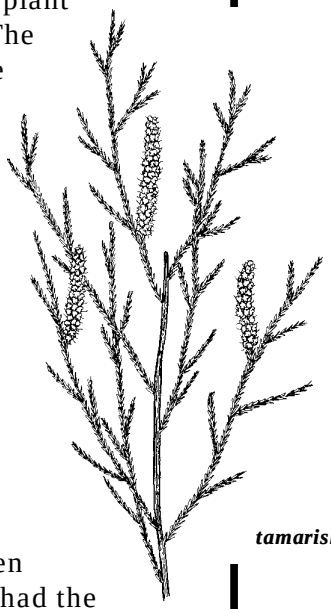
Utah's wild plants and animals have evolved together over countless generations creating complex interrelationships. When a plant or animal is introduced into Utah, those relationships can be destroyed. Typically, if a plant or animal is introduced where it has no predators, then the introduced species spreads rapidly. When that happens, native populations are unable to compete leaving native ecosystems to face uncertain futures.

Below are three examples of exotic species which have invaded Utah's riparian areas. Each specie has had a negative impact on native wildlife populations. Students can investigate these threats to healthy riparian zones and identify ways in which they can help recover this important wildlife habitat.



purple loosestrife

Purple loosestrife invades and takes over riparian areas with disastrous results. The herbaceous perennial chokes out all native vegetation, creating a dense purple landscape devoid of wildlife. Purple loosestrife came from Eurasia over a century ago. Its spread across North America was aided by the absence of native insect predators and disease. Look for a plant 3 to 6 feet tall with several square-stemmed stalks per plant. The smooth-edged leaves are attached directly to the stalk. Mature plants bear pink-purple flowers during the late summer.



tamarisk

Tamarisk were introduced from southwest Asia into the Southwest about 100 years ago. Since then they have invaded riparian areas and replaced most of the native vegetation on over 1 million acres in the western United States. It is poised to take over another million acres in the next ten years. Tamarisk has no natural insect predators in the United States and it does not play an important role in the food webs of riparian habitats. Because it uses more water than native plants, it also increases soil and water salinity. Tamarisk grow up to 15 feet tall. Look for alternate, simple, nearly scale-like leaves that are up to $^{1}/_{8}$ inch long. Pink flowers grow up to 3 inches long.

Russian-olive

Russian-olive, a thorny, medium-size tree with silver-green leaves and small one-seeded fruits called "olives", once had the blessing of wildlife biologists and was planted throughout the West. Now biologists know that Russian-olive is of little use to many wildlife species. Most birds that use riparian areas do not use areas dominated by Russsian-olive. The wood of this Eurasian invader is too hard for cavity nesters to use and it does not support insect populations for foraging warblers. Once the plant becomes established, cottonwood trees and willows can not grow in the shade of the Russian-olive.

Free Poster

Call Project WILD and ask for a copy of the colorful poster, *The Silent Invaders*. Help students identify the plants that have invaded this country and are quietly damaging native ecosystems. Also ask for a copy of the informative color brochure on purple loosestrife.

Action

School Yard Naturescaping Grants

Win a $300 student action grant from Project WILD for the 1996-1997 school year!

What is a Naturescaping Grant?
It is an action project designed by students to establish wildlife habitat on or near their school grounds.

Why does it focus on habitat?
Providing habitat for wildlife is of increasing importance. Naturescaping projects allow students to take positive actions which will result in long-term benefits for wildlife.

How large a project does it have to be?
It can be as simple as planting native plants for birds and butterflies or as extensive as revegetating winter range for big game animals. Many schools use the Naturescaping Grant as "seed" money and solicit additional funding from community and school sources.

What should the emphases be?
- To involve students in the project planning and implementation
- To design areas for interdisciplinary studies
- To plant native species
- To correlate the project to state core curricula

How do you apply?
- Request an application from Project WILD, Utah Division of Wildlife Resources, 1594 West North Temple, Ste. 2110, Salt Lake City, UT 84116. You will also receive the booklet *Creating Landscapes for Wildlife* (a guide to Utah's vegetative zones and native plants).
- Complete the application form and return it to the Project WILD office by ***October 28, 1997.***

Utah's Project WILD is able to fund Naturescaping projects due to a grant from the National Project WILD Program, the Phillips Petroleum Foundation and the National Fish and Wildlife Foundation.

evening primrose

Step out onto the Planet.
Draw a circle a hundred feet round.

Inside the circle are
300 things nobody understands, and maybe nobody's ever really seen.

How many can you find?

-Lew Welch-

Contest

River Of Words

National Environmental Poetry and Poster Contest

For each home ground we need new maps, living maps, stories, photographs, and paintings, essays and songs. We need to know where we are so that we may dwell in our place with a full heart.

-Scott Russell Sanders-

Join the Library of Congress, the United States Poet Laureate, Robert Has and The International Rivers Network in celebrating the importance of watersheds. Students explore their "ecological address" through the process of discovery and imagination. A teacher's activity guide provides suggestions and place-based activities to meet the following objectives:

- to protect and restore the integrity of the world's rivers and watersheds;
- to promote the wise management of the planet's fresh water resources for the benefit of the people and ecosystems who depend on them;
- and to create a worldwide understanding of river ecology.

If teachers and students want to enter the poetry and poster contest, they must meet the following criteria:

- students must be enrolled in grades K-12 as of January 1, 1997;
- students must be a resident of the United States or its territories;
- entries must be postmarked by February 15, 1997;
- each entry must be accompanied by a signed entry form.

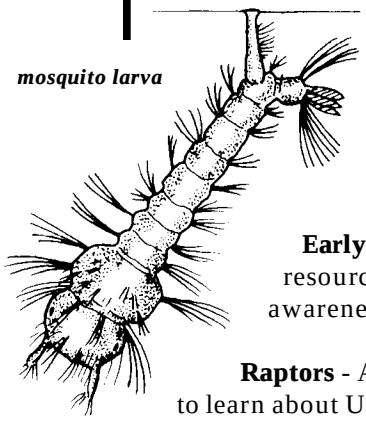
Winners of the contest will be selected by a panel of judges headed by Poet Laureate Has. Students selected as winners will be flown with a parent to Washington, DC, to participate in the Watershed festivities. Poster contest winners will have their art displayed at the Library of Congress. Poetry contest winners will share the stage with Mr. Has and other prominent poets and read their poems at an Earth Day celebration. To receive the teacher's activity guide, contest guidelines and entry form, please contact:

International Rivers Network, PO Box 4000-C, Berkeley, CA 94704
(510) 433-7020 • Fax: (510) 848-1008 • E-mail: row@irn.org • http://www.riverofwords.org/

Resources

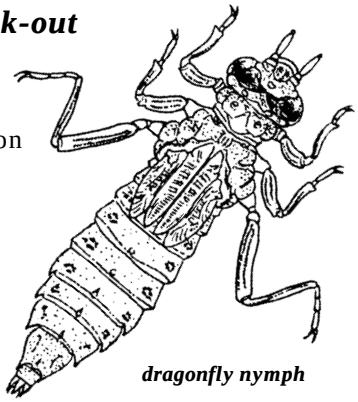
New for You!

New Resource Files Available for Check-out



mosquito larva

Neotropical Migratory Birds - Materials to examine the decline of Neotropical migratory songbirds, many of which, are dependent on riparian areas. Includes videos, articles and "Wonders on the Wing," an excellent K-12 activity guide focusing specifically on western migrants.



dragonfly nymph

Early Childhood - Wildlife story books, activity guides and teacher resource materials geared towards helping preschoolers develop an awareness and appreciation of wildlife.

Raptors - A wealth of reference materials, videos, activity guides, and more for students to learn about Utah's birds of prey.

Splish Splash and **Ripples** - Two new elementary activity guides focusing on plastics pollution in aquatic environments - additions to our "Trashing the Oceans" Resource File.

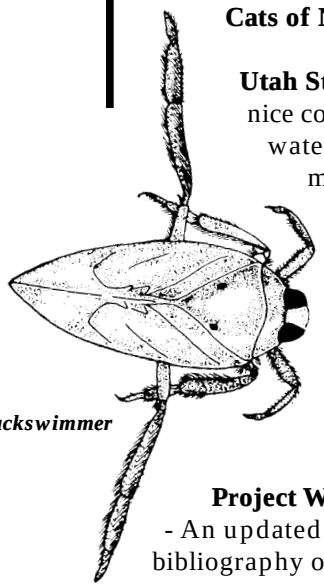
Call Project WILD for your free copy! ***(801) 538-4719***

Wildlife Coloring Book - Produced for the Utah Centennial by the Utah Wildlife Federation to help children become more aware of our state's rich wildlife heritage.

Utah Threatened and Endangered Species List - An updated list and information about the endangered and threatened species of Utah.

Cats of North America Poster - A beautiful poster of the different North American wildcats.

Utah State Map Posters - A unique collection of three large maps of Utah. A nice color map shows relief and all the rivers and creeks of Utah, however the waterbodies are not named. The other maps are black and white and show many natural features.



backswimmer

Endangered Species Fact Sheets - Part of the Fish and Wildlife Service's Biologue Series.

Keep our Western Waters Clean - A colorful brochure produced by the Environmental Protection Agency examining nonpoint source pollution of waterways in the west.

Project WILD Environmental Education Bibliography - An updated and expanded version of the Project WILD bibliography or resource materials with an environmental education emphasis.

Use Less Stuff Day - Join thousands of schools on November 21, as they try to reduce waste during the holiday season as a prerequisite to recycling. Sponsored by the ULS Report, the E.P.A. and others. Call (212) 924-6182, for more information.

Journey North

Involve your class in tracking the annual migration of Bullock's orioles. Join 1,000 other schools and 60,000 students across the country as they track a dozen migratory wildlife species, including the Bullock's oriole. Journey North, an interactive, Internet-based learning adventure provides you with an Internet site to exchange information, to explore the issues and to learn from field biologists. Visit **http://www.ties.k12mn.us/~jnorth/** for complete details.

project WILD®

Utah Division of Wildlife Resources
1594 West North Temple, Suite 2110
Salt Lake City, Utah 84116

Growing WILD is written by Bob Ellis, Diana Vos, and Audrey Walker. Jill Rensel drew the riparian scenes. Robert Hibberd drew the spotted sandpiper.

STATE OF UTAH
NATURAL RESOURCES
Division of Wildlife Resources

Bulk Rate
U.S.
POSTAGE
PAID
Permit No. 4621
Salt Lake City
Utah